Centerline Workshop
Kansas City, MO
July 24-25, 2002

Participants

Arkansas
Learon Dalby, Arkansas Geographic Information Office
John Barr, Pulaski County Public Works
Christine Crawford, Arkansas One Call
Misty Sutton, Conway County E-911

Missouri
Tim Hithcoat, MSDIS
Renee Holder, Missouri Dept. of Revenue
Nathan Mattox, MSDIS

Kansas
Nancy Mattson, Kansas DOT
Christian Cooley, Johnson County
John Dunham, DASC
Rick Miller, Kansas OIT
Ivan Weichert, Kansas OIT
Melissa Newton-Blume, Kansas Dept. of Revenue

Nebraska
Gail Knapp, City of Omaha
Larry Zink, Nebraska GIS Coordinator

Iowa
William Schuman, Iowa DOT
Alan Jensen, Iowa DOT
Bill Kapp, Iowa DOT

Federal
Wes Flack, US Dept of the Census

Private
Marlene Jeffers, Mobile Video
Stephan Dow, Shafer, Kline & Warren

July 24, 2002

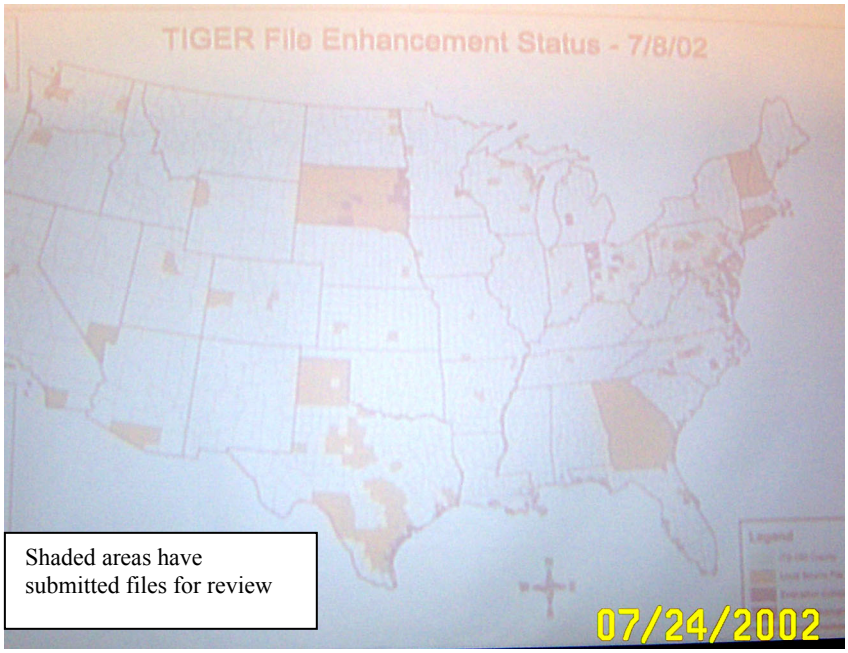
Introduction

The purpose of the meeting is to identify issues with physical addresses and address ranges across the region. This workshop will provide a basic understanding of how

physical addresses (situs) should be created, organized and maintained. There will be a limited amount of discussion on centerlines / address ranges.

TIGER Modernization- presented by Wes Flack

US Bureau of the Census awarded the TIGER Mod contract to Harris Corporation. The contract totaled $200 million. (www.harris.com)



250 counties are scheduled to be completed by the end of next physical year. The nation is scheduled to be completed by 2008. Positional (horizontal) accuracy is a fundamental component of TIGER Mod.

TIGER files will be released on an annual basis.

Q. Will the Bureau coordinate with the states or just pay contractor to do it?

A. Historically, the Census Bureau has not made a habit of distributing funds directly to cities, counties or states. The Census Bureau does want Harris to seek out the partners to cost share and acquire the best available local data. It may be possible to partner with Harris. It is unlikely money will "be given" for data that has already been created.

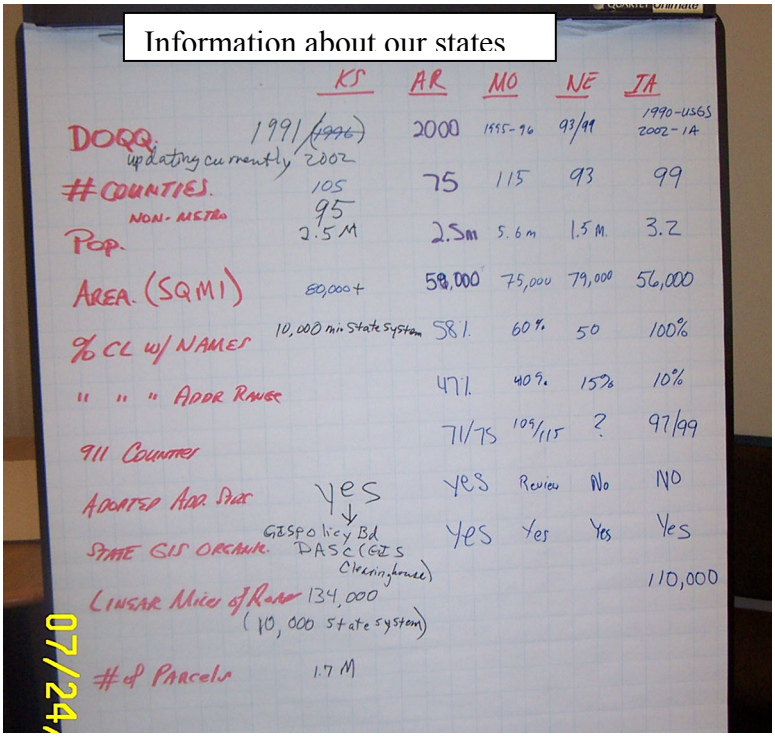
Meetings between Harris and the US Census Bureau are being held regularly to ensure coordination and reduced duplication of efforts.

Comment- NSGIC, NACIO and others should be consulted or included in the Harris / Bureau discussions.
Response- Specific concerns should be sent to Wes Flack.

*Handout- document that explains the benefits of sharing data with TIGER

Census will verify everything prior to the 2010.

Mobile Video's role in TIGER Mod- presented by Marlene Jeffers
Harris Corporation has sub-contracted with Mobile Video, AKAMI, GISJV, and several others to verify, create and provide Q/A and Q/C. Additional sub-contractors will be added in the future.



Addresses- presented by Pierce Eichelberger
Discussion focuses on physical addressing, and less on centerline address ranges. These two items are separate issues, but interrelated. (Note: Arkansas Architecture Group has adopted the AR centerline database model as the means to store physical addresses. This is critical because it will enable individuals to geocode address databases developed by state agencies.) A third component is the storing and maintaining of a point address file.

Addresses are used for numerous purposes.
1) Organize databases
2) E-911
3) Store information about individuals
4) Revenue

Addresses are stored manually and digital

Major problems
1) What is the standard?
2) Poor structures
3) 3-D addressing (i.e., building with 17 floors located at one address, each room should be "addressed")
4) Multiple names for a single street
5) Multiple addresses for a single structure

6) No mandates or legislation for ownership
7) Maintaining municipal boundaries is critical

Address matching enables GIS users to solve a large number of problems, if the address range/point file is maintained.

The power of GIS is supplied by non-GIS users. (i.e., individuals putting addresses in databases). It is important to include the substructure location (i.e., room number, name etc). This will help with taxation issues in complex

analysis. For example: a business on the 2nd floor of a building may be taxed differently than a business on the 18th floor of a building.

Addresses are more than just a layer. They are the most common geographic key.

1) Citizens know their address
2) Most are user friendly
3) Most underestimated work (time).

A good address database / centerline is great for public relations. Typing in your address and getting a "file not found" is not appealing to the public.

Consider addressing everything (i.e., parks, hiking trails, biking trails etc.)
Atlanta bombing in Centennial Park- 911 call came in and the caller said "a bomb went off in Centennial Park". There was no address for Centennial Park and the dispatcher had difficulty dispatching the appropriate resources.

Moral- Think about having a landmark identifier in the situs address database. Items such as parks, subway entrances, bus stops, etc. could be used as landmark identifiers.

**Page I-13 good example of "Graphic Centric"

Multiple agencies, governments and/or entities handle various components of addressing. This makes it very difficult to maintain a single address file that everyone can use and is another reason for the addition of primary keys.

"Folks should pick pieces of national, state or local standards that work for them. Don't adopt a standard just because it is a standard. Make sure it works for you."
"If you do not intend folks to enter data in a particular column, don't give them the column. If the column is there folks will put data in it." - Pierce E.

Economic Reasons for maintaining a point (situs) address file:
Private sector: FedEx, UPS, DHL
Business locations for directions
Wasted time and energy being lost
Loss of tax revenue, fees, auditing and capturing revenue losses.

Definitions
Interval- The distance between the address numbers- (i.e.,20')
Potential range- address numbers eligible for assignment along a block (100 blocks are typical)

Actual range- address number actually assigned along a block (220-278, not 200-299)
Consider addressing bike, walking and hiking trails.

Additional Thoughts
High level of value building relational databases with domain tables, foreign keys, and integrity. Situs address should be tied to the parcels (CAMA) and check for differences.

Address ranges should key to the graphic segments (for example-100 block ranges).

Database should be SQL compliant.

Using legacy system addresses with no edits is poor idea; consider using aliases with proper address. Legacy systems may not be able to use the updates, but others could. Maintaining poor data is POOR policy.

Role of DBA-
Supervises design and use of database
Provide database access
Who takes care of graphics?
Plays a role in client/server and distributed data architecture.

Role of users
Partnership among technical staff, operations staff and GIS
Accurate address assignments
Enter Once Use Many
Who is responsible?
Business process re-engineering issues

Easy web applications pay big dividends
Where do I vote?
What day is my trash pick-up?
Where do my kids go to school?
Who are my legislators?
Where is my police station?
Where is my fire station?
Where am I?

Automating Accurate Addresses
Parcel addresses and parcel entities in the GIS
Building or structural addresses
What is actually assigned?
Current practices
Fragmented procedures non-systems programs
Procedures and basic automation
Sharing with need to know agencies (assessors, E-911, etc.)
Use DBMS, domain tables, application systems, staff training in procedure development
All of the above are just as important as map building.

Primary Keys
1) Should be short
2) Should be numeric
3) Should NOT be familiar to the users
4) Should NOT change

Let the database engine do the work (AUTOMATION)

Foreign Keys
Design so it can join to other tables

Review of Topics
Set data standards earlier
Improve address issuance and sharing early

Use the relational data model to ensure integrity
Use domain tables to edit everything- avoid re-entering data
Store key data in databases not GIS
Minimize what is stored in GIS by storing in the DBMS that is available to everyone
Appreciate effort required, it equals GIS map conversions.

Local Implementation

Access current situation

Existing ordinances and statutes
Existing human resources
Departments – Functions – Governments
Assignment procedure documentation
Who is responsible for house numbering?
Who is responsible for street naming?
Who is responsible for street types, and directional?
Who is responsible for annexations?
Who is responsible for posting and enforcement?
Who is responsible for signage?

Need for an Architecture for Addressing and GIS

1) Interrelated DBMS architecture with geographic data model explicitly defined
2) Land/Structure/Occupancy database records address assigned at three levels
3) Address assignment automation-design and implementation
4) Geographic Index (GIX) database records: street and boundary data based on topological structures
5) Parcels and street segments/nodes and blocks an integral part of the GIS vector graphics
6) On-line mapping with operational data systems, GIS is mission critical
7) Maintenance is essential

Addressing Problems

1) Have a "system" in place.
2) View addresses as a "system" using X-Y coordinates
3) Do not use a piecemeal approach
4) EDUCATION: use workshops, media, and mailings to reach agency staff, the public and elected officials.
5) Promote cooperation early, treat addressing as a basic
6) Elevate as a code enforcement issue
7) Use opportunities; e.g., new area codes, new zip codes

Questions

Q. Return on investment studies?
A. Pierce has some he can provide

Q. What is the #1 thing start-up locals need from the state?

A. Documentation on standards, white papers, case studies, resource materials, job descriptions, titles and salaries, examples of RFPs and RFQs, technical expertise, a GIS cookbook (Maine has a cookbook), would be useful, maybe a bibliography of different standards and an explanation of how it applies.

Advice- State should treat the locals as full partners. Do not mandate without money.

Open Discussion

Note: Each participant was provided with the question below and 1 minute to provide their answer / answers. The answers were 'grouped' and participants voted on the items they thought were most important.

Q1. In trying to form consensus on a multi-state or national base standard for the interchange of these types of data, what are the key issues in terms of barriers to its success?

Answers:

1. Municipal boundaries vs the centerlines
2. Implementation at the local level
3. Availability of data may not exist
4. Education- Why is it important
5. Funding related to the data development
6. Citizen or commission resistances to standards
7. Consensus of a working data model (translators)
8. Including attribute and graphic folks
9. Coordinating multiple agencies
10. Process of formatting standards
11. Established processes, vested interest and turf
12. Buy in for the reason to adopt or create the standard
13. What is the goal and objectives?
14. Identification of stakeholders and sponsors
15. Cooperation among the key entities
16. Need a cookbook developed for regional, state, and national
17. Elimination of duplicative efforts

18. Defining the leader / owner, and incorporating private files
19. Universal way of documenting edits and changes
20. Moving away from legacy systems / Return on Investment Studies should be done
21. Who has the data? Discoverability
22. Political resistance to change
23. Worldwide integration of standards
24. Integrating centerlines with all elements (geocoding, linear reference systems, DOT concerns).
25. Training the trainer workshops URISA is always looking for trainers.
26. Lack of empowered leadership
27. Apathy
28. Problem addresses (network pathologies)
29. Timely development of documentation
30. Presentation of outcome
31. QA/QC at multiple levels
32. Legal issues
33. Policies, Laws, and/or practices that restrict data sharing
34. Creating Political Champions
35. Temporal component
36. Data gathering in rural areas ($)

37. Effective communication at all levels of government (87,000 taxing entities)
38. Gaining public trust
39. Blending with Homeland Security and the implications
40. Vested interest of private companies

Top 7 issues as voted by the group

1) Education
2) Data gathering in rural areas, who is responsible
3) Funding
4) Cookbook
5) Integration of other aspects
6) Identifying stakeholders
7) Vested interest

Q2. What are key opportunities areas to leverage to obtain success in your view?
Answers

1. Pass legislation (example West Virginia)
2. Business case and ROI for public health, safety, welfare and homeland security
3. Buy-in from visible leadership & educating partners
4. Example of a prototype in each state

5. Formalized partnerships
6. Eliminating Redundancy
7. To the degree spatial data is poor, "geo-auditing" can be leveraged
8. Defining Key data that has numerous stakeholders
9. Phase 1 & 2 FCC Wireless
10. GIS Trust Fund
11. Demonstration tool set
12. 1$ transfer fee on titles, money stays in the county where the transfer took place (state of Iowa, Illinois, Virginia)
13. Advances in technology
14. Showcase GIS- business operations
15. Education to tell the story
16. Commonalities
17. Coordination initiatives between local, state, federal
18. Leveraging fees on private services (utilities)
19. I-Teams
20. Multi-levels of government
21. Centralize information
22. Private Partnerships
23. Web-based activities

Top 3 issues as voted by the group

1) Business case, ROI, Homeland Security
2) Coordination of initiatives leveraged horizontally and vertically
3) Defining key data elements that cross over

Q3. If you were asked to list the most important items to do as far as process or mechanics to implement an effective addressing system, what aspects would you focus on and in what order?

Answers

1. Business process – diagram program, do workflow
2. Standards
3. Education- addressing and GIS
4. Form partnerships
5. Inventory Resources
6. Data model- tie back to all aspects – linear data model
7. Needs assessment
8. Common goals and data between entities
9. Entity diagram
10. Integrate 911 and GIS
11. Write the cookbook- To do list
12. Identify a base map

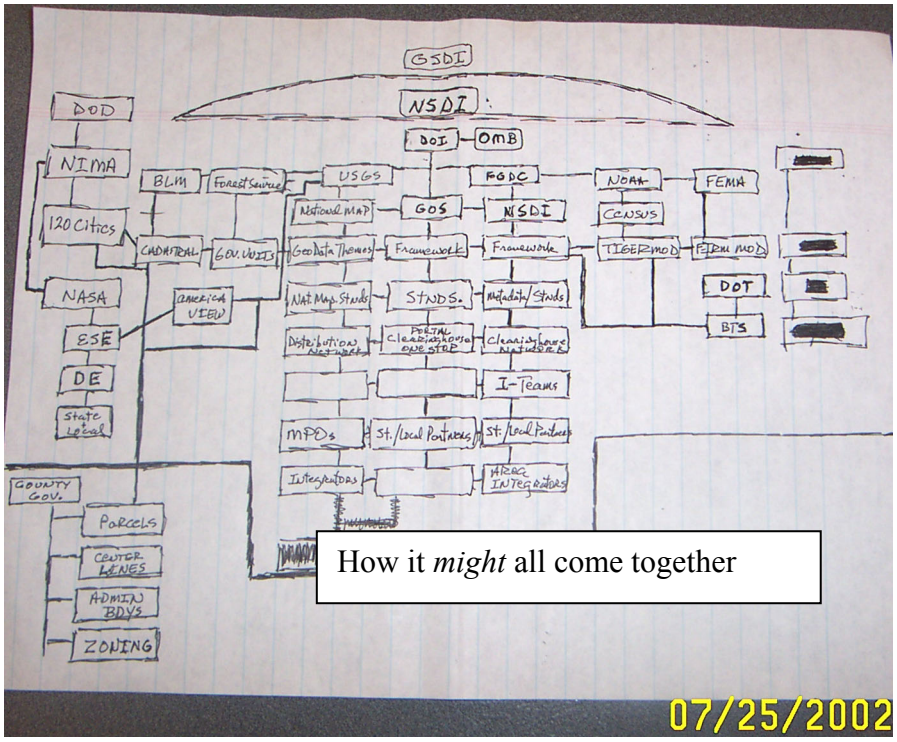
13. Integration between all business processes
14. Tracking of ROI
15. Assign unique names and #'s to streets
16. System specs
17. Design a database
18. Risk assessment
19. Assign accountability and timeline
20. Development of ordinance
21. Fill in the gaps in existing data
22. Incorporate field components (signage)
23. Examine statutes and laws
24. Develop a maintenance cycle
25. Develop a translation standard
26. Build entire exact GIS database tied to parcels
27. Develop a GIS grid or style
28. Public involvement throughout process
29. Develop street centerline
30. How will this affect other layers (boundaries)
31. Final implementation / Deployment
32. Formal configuration management plan (archiving, enhancement etc.)
33. Dedicate personnel
34. How to sell your data to the private sector
35. Marketing plan to keep people involved
36. Build automation for easy sharing of components
37. Standard certified road map for communities- shows outcome
38. Create Backups
39. Create Quality Assurance Procedures

Top 5 issues as voted by the group

1. Business Process
2. Standards
3. Assignment of Names
4. Data Model
5. Integration of 911 addresses

How National efforts tie-in with the MAGIC efforts- presented by Rick Miller (NSGIC President)

1) Through a Department of Justice grant NACIO has provided funds to MAGIC leadership to examine the problems surrounding the creation of a national centerline. MAGIC will be creating a "cookbook" for addressing and hold three workshops across the nation. A key point is the lack of participation from the locals at this time.



2) The Bush administration has promoted 24 e-government initiatives. GeoSpatial One Stop is one of the 24 initiatives. GeoSpatial One Stop is intended to be a single location for federal agencies to post plans for spatial data development. There will be standards developed for all of the framework layers in the GeoSpatial One Stop. Representation from NSGIC, NACIO, and six major state and local groups, are on the GeoSpatial One Stop Board.

GeoSpatial One Stop can be thought of as a short-term strategy for developing the NSDI.

3) The USGS National Map Initiative can be thought of as a long term is the strategy for developing the NSDI. The National map project will include: standards, partnerships, data.

4) Possible legislation is being created to provide dollars for GIS. A number of groups are trying to build a case that geodata is critical for homeland security. The NSDI is/has been compared to the national highway system (i.e. interstates). Interstates were originally built for military purposes and national security. A funding model was established to transfer funds from federal agencies to the state for the sole purpose of building of the interstate network. A similar argument and cost model could be implemented for the building and maintaining of the NSDI.

5) NSGIC is leading an effort to formulate a one-page letter that gives an overview of why the NSDI is important. All the major organizations would sign and it would be provided to Congress.

August 11-13, 2002 Street Savvy workshop

Issues Suggested by the Participants on the First Day
Data Quality
Database design
Education
Original Data Collection Accuracy
Consistent Naming Conventions
XML for street databases
Citizen Resistance
Maintenance of rural areas
Adoption and Integration of Standards
Coordination among all entities in geographic area
Local GNIS
Political buy in for funding
Complex Addressing (i.e.- Units)
Addressing rural areas that have long driveways
Standards between jurisdictions
Maintaining segment level metadata
Integrating multiple linear referencing systems (i.e.- mile post)
Train the trainer workshops
Vertical integration- of data, cost sharing, and maintenance
Politics
Assigning Custodian Ownership
Clear definition of why it is important
Conflicting Grids (when grids collide)
Funding at the local level
Interface (model) for local level coordination
Where does the US Postal Service Fit in? Who has the proper address?
Single local master address database
Address Czar
Someone pushing issues
Address modernization Champion
How do you handle legacy systems?
Incorporating Business (i.e.- Doctors offices, clinics, etc.) with the state standard
Incorporating Federal standards and initiatives
Avoid duplications of efforts
Homeland Security and address tie in